

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 4-6, 12-13, 17-20, and 22-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 4,725,317 to Wheeler in view of US Patent No. 4,820,552 to Espinosa-C. et al.

Regarding claims 1, 4-6, 12-13, 17-20, and 22-31, Wheeler teaches a process through which flakes of metal pigments are produced by ball milling (i.e. a form of mechanical milling) in the presence of an organic liquid such as mineral spirits (column 1, line 64 to column 2; column 2, lines 19-30; claim 9). It is to be noted that mineral spirits act as lubricant as well (column 2, lines 60-61). Nevertheless, Wheeler does not limit the organic liquid to mineral spirits as it discloses the use of "an organic liquid" in the milling. Said milling is applied to metal pigments which may be aluminum, bronze or etc. (column 3, lines 54-58). It is noted as disclosed by Wheeler, the metal flakes so produced are separated, as by wet-sieving, to provide the desired particle size distribution (column 2, lines 23-30). When the metal flakes are brought to a paste-like

consistency, there exists 55-80% by weight of metal content; thus, the paste contains metal pigment. This mixture is mixed with an organic binder material to form the coherent paste as indicated in column 1, lines 64-68 and column 5, lines 44-49. Additionally, Wheeler discloses the formation of the coherent paste, which comprises flakes of metal pigment, an organic binder medium and the organic liquid vehicle, into pellet, granule, flake or beads (spherical) in order to provide good handling properties and optionally meterability (column 5, lines 49-52). The organic vehicle can be removed from the coherent paste at elevated temperatures (i.e. evaporation) (column 2, lines 45-47; column 5, lines 59-61). Wheeler discloses that the metal pigment particles are suitably from 2 to 200 micrometers (column 3, lines 60-62).

Wheeler, also, discloses that the metal flake pigments in particulate form are at least 98% by weight of the particles which are retained on a sieve having 150 micrometer nominal aperture (column 2, lines 40-44). It should be noted that Wheeler makes no reference to the use of water as can be seen in column 2.

Moreover, Wheeler discloses the injection moulding of the granulated metal pigment paste product (column 9, lines 44-55); Wheeler discloses that the granule/pellets obtained may be mixed with pellets of PVC or acrylic polymers for injection moulding to provide moulded articles having a bright metallic appearance and in which the aluminum flake is uniformly dispersed (column 9, lines 67-69; column 10, lines 1-4). It is to be noted that the reference, further, discloses the use of said pellets of the disclosed composition in ink systems (column 3, lines 20-24; column 10, lines 25-30). Furthermore, the reference points to the fact that the granules formed from the

above paste break down and disperse readily in aliphatic and aromatic hydrocarbons, ketones, esters, alcohols and dilute aqueous alkali (column 6, lines 52-56).

Finally, Wheeler, in fact discloses a composition which is a low or non-dusting substantially non-volatile composition having a coherent paste comprising an organic binder medium, flakes of metal pigments and an organic liquid vehicle (Abstract; column 1, lines 64-68).

With reference to the overlapping ranges of concentration of metal flake pigments and the size, it is to be noted that overlapping ranges have been held to establish *prima facie* obviousness. See MPEP § 2144.05.

With reference to the recitation of "for producing a low volatility metal flake pigment composition", it is to be noted that this is a statement of intended use even though the reference makes indication to said recitation. With reference to such statements, MPEP § 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. See, e.g., *In re Otto*, 312 F.2d 937, 938, 136 USP 458, 459 (CCPA 1963).

However, although Wheeler teaches the use of an organic liquid, said reference does not expressly disclose the use of one of the specific milling fluids recited in instant claim 1 and broadened in instant claim 13.

Nevertheless, it would have been obvious to utilize an organic liquid as the milling fluid such as glycols, for example, propylene glycols as milling fluid in milling

metal powder such as zinc powder which is mixed with a metal oxide such as aluminum oxide as that taught by Espinosa-C. et al. (column 2, lines 17-42) motivated by the fact that Espinosa-C. et al. disclose said organic liquids as conventionally employed and well known in the art for wet-milling flake metal powder (column 2, lines 22-24). Furthermore, this combination is motivated by the fact that Wheeler disclose the use of "an organic liquid", and this is seen to read on any organic liquid, specially those known to be used in milling such as those disclosed by Espinosa-C. et al. Additionally, this combination is motivated by the fact that it has been held that the substitution of equivalents requires no express motivation. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). In other words, Espinosa-C. et al. disclose both mineral spirits and propylene glycol as organic liquid solvents used in milling metal powder flakes; therefore, it is seen that they are functionally equivalent. It is to be noted that Wheeler teaches the use of mineral spirits, and although it may not expressly disclose propylene glycols, the fact that Espinosa-C. et al. teach both compounds as organic liquids used in milling metal flake powder is seen to suggest that the two compounds are functionally equivalent, at least, in milling metal flakes. It is to be noted that zinc is known to be used in pigment industry; thus, it's considered a pigment.

Therefore, it would have been obvious to modify Wheeler in order to include the use of glycols such as propylene in the milling fluid in the place of mineral spirits as that taught by Espinosa-C. et al. as that shown above since they are functionally equivalent and are used in the same field, namely, milling metal pigment powder.

In addition, the organic liquid used by the combination of references meets the limitation with reference to “non-hydrocarbon” milling fluid.

With further reference to instant claim 22, it is noted that mineral spirits is a type of mineral oil.

With further reference to instant claim 12, it is noted that while the composition containing organic vehicle and the milled particles has been treated under elevated temperature, it would have been obvious that not only organic vehicle is evaporated but also the flakes have gone through some thermal treatment absence clear evidence showing the contrary.

With further reference to claim 32, it is to be noted that the combination of Wheeler in view of Espinosa-C. et al. read on the limitation of instant claim 1, therefore, the low volatility of the milling fluid is expected to follow from the composition of the combination of references absence clear and specific evidence showing proving the contrary.

**Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wheeler in view of Espinosa-C. et al. as applied to claims 1 and 13 above, and further in view of US Patent No. 6,210,474 to Romano, Jr. et al.

The combination of Wheeler and Espinosa-C. et al. teaches the process of milling metal pigment using milling fluid as detailed above.

The combination of references does not specifically disclose the use of a compound such as propylene carbonate. Nevertheless, it would have been obvious to

utilize ester solvents such as propylene carbonate in a milling process as that taught by Romano, Jr. et al. motivated by the fact that, first, Romano, Jr. et al. is drawn to a process involving milling pigments which is a relevant art as the instant invention, second, it is motivated by the fact that the use and selection of a solvent such as propylene carbonate depends on the requirements of the specific application, such as desired surface tension and viscosity, the selected pigment, etc. (Abstract; column 5, lines 46-60). It is noted that Romano, Jr. et al. is also drawn to processes involving preparation of ink which is a relevant field of art as that of the instant invention. Thus, the combination is found proper.

**Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wheeler in view of Espinosa-C. et al. as applied to claims 1 and 13 above, and further in view of US Patent Application Publication No. 2002/0117080 to Okutsu et al.

The combination of Wheeler and Espinosa-C. et al. teaches the process of milling pigment using milling fluid as detailed above.

The combination of references does not specifically disclose the use of a compound such as dipropylene glycol monoethyl ether. Nevertheless, it would have been obvious to utilize a water-soluble organic solvents such as dipropylene glycol monoethyl ether to wet crude pigment and the water-soluble inorganic salt in a milling process such as that taught by Okutsu et al. motivated by the fact that since during the milling process, the temperature is increased, such compounds are more suitable in

terms of safety ([0030]). Further, it is noted such solvents are preferred because they can be dissolved in water, but they do not substantially dissolve an inorganic salt which is used as the grinding aid ([0028], [0030]). Based on the above reasoning and motivations, the combination is found proper.

**Claims 3, 10-11 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Wheeler in view of Espinosa-C. et al. as applied to claim 1 above, and further in view of US Patent No. 5,879,436 to Kramer et al.

The combination of Wheeler and Espinosa-C. et al. teaches the process of milling metal powder pigments using milling fluid as detailed above.

Although Wheeler in view of Espinosa-C. et al. may not expressly disclose the use of a corrosion inhibitor such as one of those claimed instantly, it would have been obvious to one ordinary skill in the art to utilize a corrosion inhibitor such as phosphate- or borate-containing pigments as that taught by Kramer et al. during milling process motivated by the fact that Kramer et al. disclose the use of corrosion inhibitors such as phosphate- or borate-containing compounds during the dispersion of pigments by milling (column 17, lines 52-63; column 18, lines 16-20).

With further reference to claims 10 and 11, it is noted and obvious to one of ordinary skill in the art that said corrosion inhibitors such as phosphate- containing compounds modify to treat the pigment or metal powders or flakes by making them anticorrosive.

***Response to Amendment***

Applicant's amendments to claims 1, 6, 13-14 and 21, filed April 21, 2009, are acknowledged. However, said amendments are not sufficient to place the claims or the application in condition for allowance as detailed above and responded below.

***Response to Arguments***

Applicant's arguments filed April 21, 2009 have been fully considered but they are not persuasive.

It is noted that the claims are rejected over a new ground(s) of rejection necessitated by amendments over Wheeler in view of Espinosa-C. et al. as detailed out above; therefore, a number of arguments drawn to the previous rejection are not deemed to be responded.

Applicant has argued that the processes disclosed by Wheeler reference and that claimed in the instant application are different.

The Examiner thanks the Applicant for submission of the diagrams; however, it is to be noted that no specific indication has been recited with reference to the steps involving the claimed process. For example, with reference to the addition of lubricant and/or corrosion inhibitor, there is no indication/recitation in the claims as at what stage this is added. However, the Applicant seems to have laid out specific steps in the diagrams submitted; in other words, clear and separated steps are not shown in the



language of the claims. Therefore, the diagrams and related arguments by Applicant are not found persuasive.

Applicant has argued that there is no description in Wheeler of milling a metal powder in a milling fluid selected from those set out in present claim 1.

The Examiner, respectfully, submits that this argument is drawn to the claim as amended; thus, it is not deemed to be responded. Nevertheless, instant claim 1 is rejected in a 103(a) obviousness rejection over a combination of references, namely Wheeler in view of Espinosa-C. et al.; therefore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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